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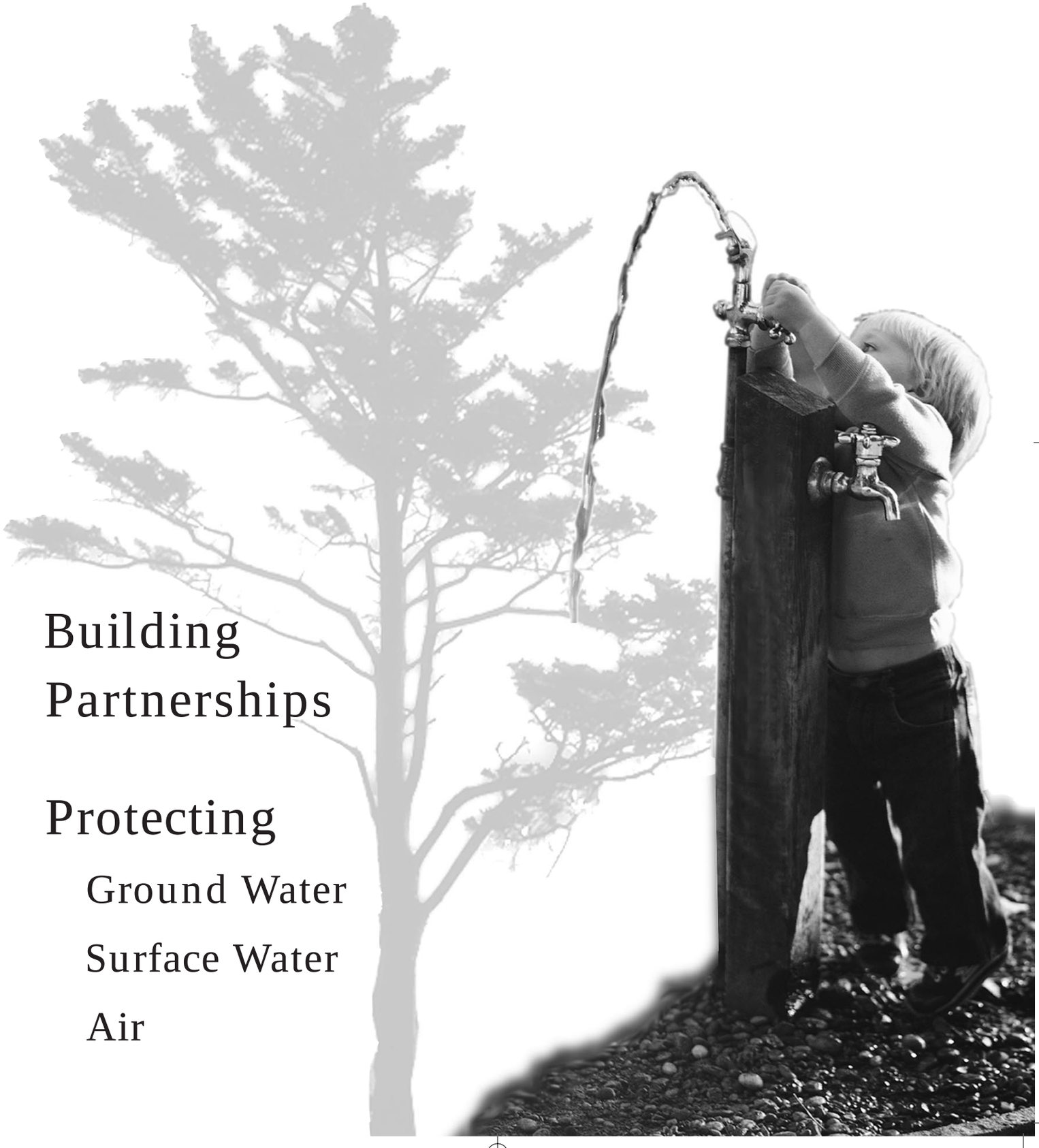
Guide for Industrial Waste Management



Building
Partnerships

Protecting

- Ground Water
- Surface Water
- Air

Proposed Guide For Industrial Waste Management For Public Comment

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Disclaimer

All aspects of this guidance are in draft form, subject to comment, and not intended to be used in current waste management decision-making. The draft guidance and modeling tools have been developed only to address issues within the scope of the guidance. The guidance is not a guideline or regulation under the Resource Conservation and Recovery Act, nor can this draft guidance be relied upon to create any rights enforceable by any party in litigation with the United States. EPA retains the right to modify the final guidance from time to time.

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Contents

EPA's Guide for Industrial Waste Management Introduction

This voluntary guide is designed to assist facility managers, state and tribal environmental managers, and the public to evaluate and choose protective practices for managing industrial waste in new landfills, waste piles, surface impoundments, and land application units. This guide identifies the components of a sound waste management system and why each is important. It also includes ground-water and air models, as well as other tools to help tailor waste management practices to a particular facility.

This guidance reflects four underlying principles:

- Protect human health and the environment. This is the focal point. The guidance is multi-media, emphasizing surface water, ground water, and air protection, with a comprehensive framework of technologies and practices that make up a sound waste management system.
- Tailor management practices to risks. There is enormous diversity in the nature of industrial wastes and the environmental settings where they are managed. The guidance provides conservative national management recommendations and user-friendly modeling tools to make location-specific adjustments It also identifies complex analytic tools to conduct comprehensive site-specific analyses.
- Affirm state and tribal leadership. States, tribes, and some local governments have primary responsibility for adopting and implementing programs to ensure proper management of industrial waste. It is important to note that individual states or tribes may have more stringent or extensive regulatory requirements based on local or regional conditions or policy considerations. This guide complements, but does not supersede those regulatory programs. It can help you make decisions on meeting requirements and filling potential gaps. Facility managers and the public, consult with appropriate regulatory agencies throughout the process to understand their ` requirements and how they want you to use this guide.
- Foster a partnership. The public, facility managers and regulatory agencies share a common interest in preserving quality neighborhoods, protecting the environment and public health, and enhancing the economic well-being of the community. This guide provides a common technical framework to facilitate discussion. Stay involved and work together to achieve meaningful environmental results.

I. Setting the context

About 7.6 billion tons of industrial solid waste are generated and managed on-site at industrial facilities each year. Almost 97 percent is wastewater managed in surface impoundments; the remainder is managed in landfills, waste piles, and land application units. Most of these wastewaters are treated and ultimately discharged into surface waters under Clean Water Act permits issued by EPA or state governments (National Pollutant Discharge Elimination System or NPDES permits). These wastes come from the broad spectrum of American industries. This guidance is not designed to address municipal wastes or wastes defined as hazardous under federal or state laws.

EPA and 12 state representatives selected from the membership of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) began development of this guidance in 1996 with the formation of a State/EPA Steering Committee. We set out with three goals: first to define a baseline of management practices that protect human health and the environment; second, to complement existing state and tribal regulatory programs; and third to produce an effective and user-friendly guide that all stakeholders will rely on. The Steering Committee is co-chaired by one EPA and one state member. At the same time, we had the benefit of a Focus Group of industry and public interest stakeholders chartered under the Federal Advisory Committee Act to consult with us throughout development of the guidance. The Steering Committee and Stakeholders' Focus Group members are listed in the front of this document.

The draft guide you have in hand reflects a remarkably productive consultative process. Focus Group members provided extensive comment and commitment of their time throughout. Their thoughtful input helped us to make this a more comprehensive and effective product, although the final decisions are those of the Steering Committee. Right now, our work is half completed. The Steering Committee will reconvene to consider the feedback we receive during the comment period and continue to seek advice from the Stakeholders' Focus Group as we develop the final guidance.

II. Scope

This guidance is useful for a broad array of industrial process wastes, especially those that are managed at the industrial facilities where they are generated. However, we did not consider certain extractive wastes, such as from mining or oil and gas production, and recommendations may not be suitable for these wastes without further tailoring. Furthermore, any facilities that receive municipal solid waste are subject to municipal landfill criteria at 40 CFR Part 258 and to separate state or tribal municipal landfill regulations and are not addressed by this guidance.

The guidance focuses on the design of new units. Liner design and siting concerns are clearly directed at new units. However, other management recommendations, such as for groundwater monitoring, corrective action, operating practices, and closure and post closure care, may be helpful in making management decisions for currently operating units as well.

III. Using the guidance

There are a few key steps to follow:

- **Understand and comply with all existing Federal, state or tribal regulations, permits and operating agreements that apply to a waste management unit.** The guidance is designed to complement them, never to take their place.
- **Thoroughly characterize constituents and concentrations in the waste.** Waste characterization is the foundation for choosing and implementing tailored, protective management practices. To assess potential ground-water risks, the guidance provides drinking water maximum contaminant levels (MCLs), when they exist, and health-based reference levels for 191 constituents. To assess potential air risks, the guidance provides inhalation health-based reference levels for 95 volatile and semi-volatile constituents.
- **Take advantage of pollution prevention opportunities.** Pollution prevention, recycling and, to some extent, treatment, can minimize reliance on waste disposal, reduce disposal costs and reduce future costs and liabilities for closure and post closure care and potential corrective action. Pollution prevention can also conserve raw materials.
- **Build a partnership between all stakeholders who have an interest in waste management decisions.** Keep stakeholders informed and involved on an ongoing basis.
- **Tailor management practices to the wastes and the environmental setting of the unit.** The guide covers all the components of a sound waste management system. It recommends best management practices and the key factors to take into account in siting, operation, design, monitoring, corrective action, closure and post closure care. The guidance also directs you to a wide variety of useful tools and resources, and includes a number of these tools as appendices. In particular, the guidance recommends risk-based approaches to choose liner systems and waste application rates for ground-water protection and to evaluate the need for air controls.

Here is an example of how the risk-based evaluation would work for choosing a liner system design. For ground-water protection, the approach is three-tiered, relying on modeling fate and transport of constituents through subsurface soils to ground water. Successive tiers in the analysis incorporate more site-specific data to tailor protective management practices to your particular circumstances.

Tier 1 - National Evaluation: Once you know the concentrations of constituents in the waste, generic "look-up tables" give you recommendations on appropriate liner design. If the waste going into a unit contains several constituents, choose the most protective liner design indicated for any of the constituents.

Tier 2 - Location Adjusted Evaluation: You can use location-specific data for up to seven of the most sensitive waste and site-specific variables to assess whether a particular liner design will be protective. The CD ROM version of the guidance provides a ground-water model for Tier 1 and 2 analyses.

Tier 3 - Comprehensive Site Assessment: This tier relies on a comprehensive analysis of specific waste and site characteristics to assess whether a particular liner design will be protective. The guidance identifies a number of models for this detailed analysis.

IV. Next Steps

We have provided the draft guidance in a printed version, on a CD ROM and it is accessible through the Internet at <www.epa.gov/osw>. Now, EPA and the state participants from ASTSWMO welcome your comments on all aspects of this draft: the substantive recommendations, the risk-based modeling tools, practicality and user friendliness. The accompanying *Federal Register* notice and some chapters of the guidance frame a number of key questions and issues to help you get started. The public comment period will extend for six months from the date of the *Federal Register* notice. Based on your comments, we will make revisions and release the final guidance.

EPA and state representatives participating in this effort believe that the recommendations in the final version of this guide can help to improve management of industrial waste at facilities across the country. EPA and ASTSWMO will widely disseminate the final version of the guide and explain the rationale behind the recommendations to regulators, industries and the public to foster understanding and encourage stakeholders to integrate final recommendations in future industrial planning throughout the country.

V. Final Thoughts

This guidance is designed for users with different levels of knowledge and experience. Because many of the recommendations here address complex and highly technical practices and engineered systems, users are urged to seek out technical experts and resources to assist in detailed planning, design and implementation.

Facility managers, regulatory agency staff, and the public all have a different role in ensuring protective waste management and, therefore, this guidance can help all of you.

- Facility managers: The guide can help you make the decisions necessary to ensure environmentally responsible unit siting, design, and operation in partnership with state and tribal regulators and the public.
- State and tribal regulators: The guide provides a handy implementation reference that complements your program and can help you address any gaps.
- The public: The guide can help you be an informed and knowledgeable partner in addressing industrial waste management issues in your community.